

Combustor Test Facilities at Glenn

at NASA Glenn Research Center – Cleveland, Ohio

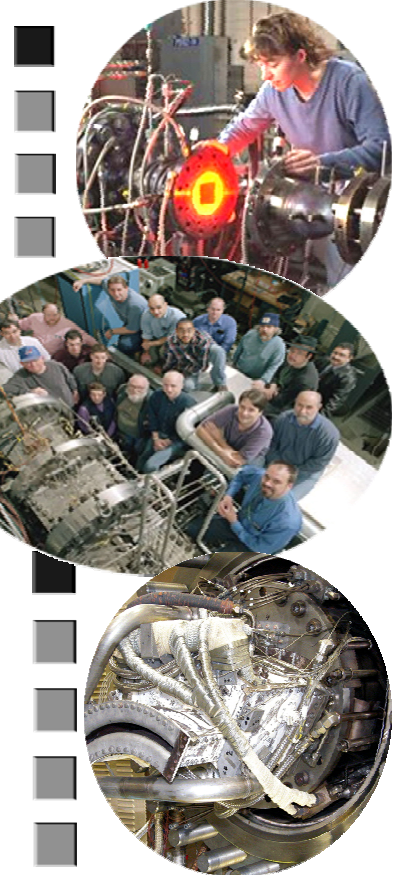
Facility Description: Glenn Research Center has seven combustor test rigs with varying capabilities.

The **Advanced Subsonic Combustion Rig (ASCR)** NASA Glenn's unique high pressure and high temperature combustor facility (60 atmospheres). Provides NASA and U.S. engine manufacturers the ability to quantify effects of high pressure on combustor emissions, durability and operability.

The **Engine Research Building (ERB)** complex houses over 60 test rigs supporting research on all aspects of engine development, providing superior testing of turbomachinery, aerodynamics flow physics, aeropropulsion heat transfer, mechanical components and combustor facilities.

The **Engine Components Research Lab (ECRL)** houses two separate test rigs. Cell 1B is used to evaluate advanced concepts for full-scale engine and augmentor components. Cell 2B is used to test full-scale sea-level turboshaft engines.

The **Research Combustion Lab (RCL)** has many test cells supporting testing of propulsion components and materials in sub-scale combustion environments, RCL-23 supports engine combustor development.



Facility Benefits:

- NASA Glenn has a wide range of combustor test facility capabilities including flametube testing, sector testing, full-annular testing and full-scale jet engine testing
- ASCR is a one-of-a-kind facility able to simulate combustor tests up to 60 atmospheres
- ERB offers four test stands in CE-5B/9B able to simulate combustor tests up to 30 atmospheres
- ECRL provides flexibility of testing a wide variety of test hardware configurations
- Non-intrusive laser and gas analysis diagnostic measurements
- Accommodates in-house and private industry research programs
- Highly qualified staff of technicians, engineers, researchers, and operators
- High customer satisfaction

Facility Testing Information:

For information on testing please go to:
<http://facilities.grc.nasa.gov>

Commercial Applications:

- Aircraft engines
- Aerospace Propulsion
- Materials Research and Development

Programs/Projects Supported:

- Ultra-Efficient Engine Technology (UEET)
- Low Emissions Alternative Power (LEAP)
- Rocket Based Combined Cycle (RBCC)
- Joint Strike Fighter Augmentor Development

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Facility Designation	Test Emphasis	Supply Pressure Range (PSIG)	Air Flow Range (lb/sec)	Non-Vitiated Heated Air Temperature Range (Deg F)	Max Exhaust Temperature (Deg F)
CE-5B-1	Sector	60 - 275	2 - 12	500 - 1350	3200
CE-5B-2	Flametube	60 - 400	0.6 - 5	500 - 1350	3200
CE-9B-A	Sector	120 - 450	5 - 30	750 - 1100	3400
CE-9B-B	Flametube	120 - 450	1 - 15	750 - 1100	3400
ASCR Leg 1	Sector	50 - 900	3 - 50	500 - 1200	3400
ASCR Leg 2	Flametube	50 - 900	1 - 10	500 - 1200	3400
ECRL-1B	Augmentors	5 - 150	5 - 60	100 - 600	1900
RCL-23	Flametube	0 - 350	0.5 - 4	500 - 1200	3000